

Name _____

9-7B Lesson Master**Questions on SPUR Objectives**
See Student Edition pages 656–659 for objectives.**VOCABULARY**

In 1-4, write the logarithmic equation as an exponential equation.

1. $\log_7 \frac{1}{343} = -3$ _____

2. $\log_9 27 = \frac{3}{2}$ _____

3. $\log_4 16,384 = 7$ _____

4. $\log_{16} 64 = \frac{3}{2}$ _____

In 5-8, write the exponential equation as a logarithmic equation.

5. $6^8 = 1,679,616$ _____

6. $x^y = z$ _____

7. $12^4 = 20,736$ _____

8. $25^{3.5} = 78,125$ _____

SKILLS Objective A

In 9-18, evaluate in your head. You may check with a calculator.

9. $\log_4 \frac{1}{4}$ _____

10. $\log_{26} 26$ _____

11. $\log_{16} 4$ _____

12. $\log_2 8$ _____

13. $\log_{39} 1$ _____

14. $\log_{52} 52^4$ _____

15. $\log_8 4$ _____

16. $\log_6 7776$ _____

17. $\log_5 25$ _____

18. $\log_{12} \sqrt[4]{12^5}$ _____

19. Evaluate to the nearest thousandth.

a. $\log_2 403 \approx$ _____

b. $\log_{0.6} 9 \approx$ _____

c. $\log_{15} 1.06 \approx$ _____

SKILLS Objective C

In 20-23, write the equivalent exponential equation; use it to solve the logarithmic equation. Do as much work as you can in your head.

20. $\log_7 x = 3$ _____

21. $\log_{16} x = -\frac{3}{2}$ _____

22. $\log_b 27 = 3$ _____

23. $\log_x 8 = -\frac{3}{4}$ _____

24. Solve $5 \log_5 x + 2 = 12$ for x . _____

PROPERTIES Objective E25. **True or False** If the expression $\log_b n$ is defined,

a. $b = 1$. _____

b. $n > 0$. _____

c. $b < 0$. _____

26. Write the equivalent logarithmic form for $p^r = s$. _____

Name _____

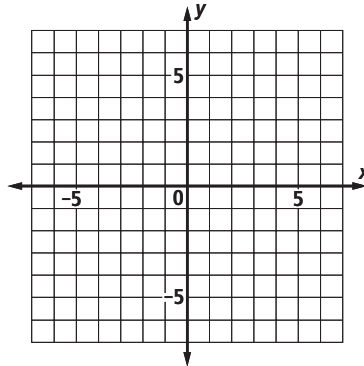
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REPRESENTATIONS Objective K

In 27 and 28, consider the graphs of $f(x) = 5^x$ and $g(x) = \log_5 x$.

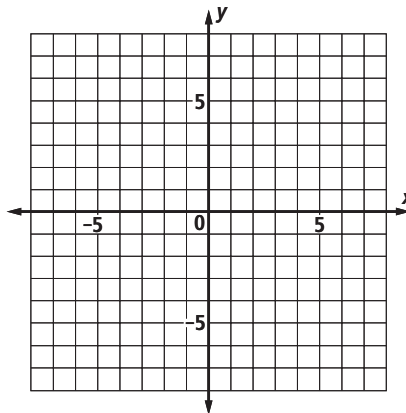
27. Graph each function at the right. Label three points on the graph of f with their coordinates, and the corresponding points on the graph of g .



28. Name the asymptotes of each function. _____

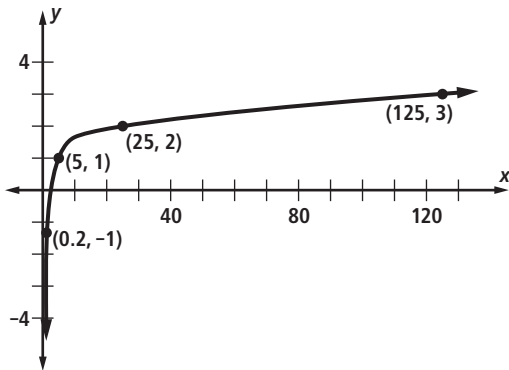
In 29 and 30, consider the graphs of $f(x) = 4^x$ and $g(x) = \log_4 x$.

29. Graph each function at the right. Label three points on the graph of f with their coordinates, and the corresponding points on the graph of g .



30. Name the asymptotes of each function. _____

31. The graph below has equation $y = \log_b x$. Find b . _____



32. Consider the graph of the equation $y = 8^x$. The reflection image of this graph over the line $x = y$ results in a graph described by what equation? _____